



BOSTON REGION METROPOLITAN PLANNING ORGANIZATION

Richard A. Davey, MassDOT Secretary and CEO and MPO Chairman
Karl H. Quackenbush, Executive Director, MPO Staff

MEMORANDUM

DATE October 3, 2013
TO Boston Region Metropolitan Planning Organization
FROM Karl H. Quackenbush
CTPS Executive Director
RE Work Program for: Priority Corridors for LRTP Needs Assessment, FFY 2014

ACTION REQUIRED

Review and approval

PROPOSED MOTION

That the Boston Region Metropolitan Planning Organization vote to approve the work program for the Priority Corridors for LRTP Needs Assessment, FFY 2014, in the form of the draft dated October 3, 2013.

PROJECT IDENTIFICATION

Unified Planning Work Program Classification

Planning Studies

CTPS Project Number

13262

Client

Boston Region Metropolitan Planning Organization

CTPS Project Supervisors

Principal: Efi Pagitsas

Manager: Seth Asante

Funding

MPO Planning Contract #78890

MPO §5303 Planning Contract #78922

IMPACT ON MPO WORK

This is MPO work and will be carried out in conformance with the priorities established by the MPO.

BACKGROUND

The Boston Region MPO's Long-Range Transportation Plan (LRTP), *Paths to a Sustainable Region*, identified regional needs that exist for all modes of transportation in the MPO region.¹ These needs guide the decision making about which projects to include in future Transportation Improvement Plans (TIPs).² In identifying the regional needs, MPO staff divided the MPO region into subregional corridors and areas (six radial, two circumferential, and a central area) in order to simplify and examine the region's complex transportation system. Among the current mobility needs of the region are maintaining and modernizing roadways with high levels of congestion and safety problems, improving the quantity and quality of walking and bicycling in the region, and improving transit service adherence, efficiency, and modernization.

For roadways, the LRTP identified several priority arterial segments in need of maintenance, modernization, safety, and mobility improvements. These arterial segments were identified based on previous and ongoing transportation-planning work, including the MPO's Congestion Management Process (CMP), the MBTA's Program for Mass Transportation (PMT), and MPO planning studies. To help identify solutions for addressing problems in some of these arterial segments, a roadway corridor study was included in the federal fiscal year (FFY) 2014 Unified Planning Work Program (UPWP) to address the mobility, safety, and preservation concerns for those arterial segments.³ In FFYs 2012 and 2013, MPO staff studied Route 203 in Boston, Route 114 in Danvers, Route 2 in Concord, and Route 30 in Framingham; several of the recommendations are already being considered for design and implementation.

The study of a roadway corridor or corridor segment is a logical way to address regional multimodal transportation needs, as it allows a roadway corridor to be evaluated comprehensively: pedestrians, bicyclists, motorists, and public transportation users are considered using a holistic approach to the analysis of the

¹ *Paths to a Sustainable Region, the Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization*, September 22, 2011.

² Transportation Improvement Program and Air Quality Conformity Determination, Federal Fiscal Years 2014–17, endorsed by the Boston Region Metropolitan Planning Organization on July 25, 2013.

³ Unified Planning Work Program, Federal Fiscal Year 2014, endorsed by the Boston Region Metropolitan Planning Organization on July 11, 2013.

issues and associated improvement recommendations. The resulting solution is an improved roadway corridor, where it is safe to cross the street and walk or cycle to shops or schools, and for recreation; where buses can run on time; and where it is safe for people to walk to and from train stations. Typically, a roadway corridor or corridor segment study is multimodal and addresses issues, analyzes services, makes recommendations for areas within the roadway's right-of-way, and takes into account the needs of the abutters and users.

An arterial segment is defined broadly in this document as a portion of an arterial corridor spanning multiple towns or restricted to just a few intersections in a town center or shopping center. For an arterial segment spanning multiple towns or an entire town, the problem locations are usually subsegments of the arterial segment. The arterial segments that were identified in the LRTP (not in order of priority) are:

- Route 1 North Improvements in Saugus and Lynnfield
- Route 1/VFW Parkway in Dedham, Norwood, and Boston
- Route 1A from Oak Island Road to Bell Circle in Revere
- Route 1A southbound from the rotary to the first Bell Circle signal in Revere
- Route 2 in Acton, Concord, and Lincoln
- Route 3/3A in Burlington and Woburn
- Route 3A from Quincy to Hingham
- Route 9, various segments between Southborough and Boston
- Route 16 (Revere Beach Parkway) Safety and Operations Improvements from Everett to Chelsea
- Route 16 from Wellesley to Newton
- Route 27 between Depot Street and Canton Street in Sharon
- Route 28 in Randolph
- Route 28 from the Assembly Square Mall to Highland Avenue in Somerville
- Route 30 in Framingham between I-90 and Route 9
- Route 37 from Braintree to Holbrook
- Route 38 in Woburn and Wilmington
- Route 60 in Arlington, Belmont, and Waltham
- Routes 62, 225, and 4 corridor in Bedford, Lexington, and Middleton
- Route 99 in Everett
- Route 107/Broadway in Revere south of Albert J. Brown Circle
- Route 109 in Milford from I-495 to Birch Street
- Route 114 in Peabody, Salem, and Middleton
- Route 127 in Rockport and Gloucester
- Route 129 in Marblehead and Swampscott to Route 1A in Lynn
- Route 138 from Stoughton Center to the I-93 interchange in Canton
- Route 140 between Wrentham and Franklin
- Route 145 from Boston to Winthrop

- Route 203/Jamaicaway from Willow Pond Road to Forest Hills Rotary in Boston
- Alewife Brook Parkway/Fresh Pond Parkway from Soldiers Field Road to Route 2 in Cambridge
- Mystic Valley Parkway in Medford from Auburn Street to Main Street
- Storrow Drive in Boston
- Memorial Drive in Cambridge

OBJECTIVES

The objectives of this study are to select one arterial segment from the list above and identify the safety, mobility, access, and other transportation-related problems within the arterial segments and to identify and evaluate multimodal transportation solutions to the problems.

WORK DESCRIPTION

MPO staff will perform the following tasks:

1. Solicit agency and municipal input
2. Select study locations
3. Collect data
4. Analyze data
5. Recommend improvements
6. Document findings

Task 1 Solicit Agency and Municipal Input

In addition to municipal officials and members of the MPO subregional groups for the areas in which the arterial segments are located, MPO staff will invite representatives from the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning, MassDOT Highway Division, and Metropolitan Area Planning Council (MAPC) to participate in the study, in order to give MPO staff advice and input on data, to identify transportation-related problems, and to develop multimodal transportation solutions and recommendations. Recommendations from this study will be carried out by the municipalities or the Highway Division; therefore it is important that the recommendations reflect their experience and design standards.

Products of Task 1

Notes on stakeholder input on data, the selection of study locations, the review of study products, and recommendations of possible solutions

Task 2 Select Study Locations

First, MPO staff will rank the arterial segments using available CMP data, such as traffic volumes, crashes, speeds, bus crowding and/or schedule adherence, traffic signal coordination, and pedestrian and bicycle needs. The arterial segment selected for study will be one that could benefit from improvements related to sidewalks and crosswalks, access management, traffic control and operations (including traffic signal upgrades and coordination), and pavement rehabilitation. In addition, the arterial segments selected for this study will need to have the support and interest of the communities through which they pass; the communities have to be committed to implementing the recommendations of the study.

Based on the rankings of the arterial segments and support and interest of the communities to implement the study's recommendations, MPO staff will select one arterial segment from the list above for this study. Both the list of segments from the LRTP and the staff recommendation for the segment to study will be presented to the MPO for discussion. For the arterial segment selected for this study, MPO staff, working in conjunction with agency and municipal officials, will identify problem locations (subsegments) within the arterial segment where this study should focus on developing multimodal transportation improvements.

To this end, staff will identify safety and mobility problems facing pedestrians, bicyclists, motorists, and transit users, as well as transit service deficiencies and connectivity problems. Staff will also identify truck traffic issues, such as crash locations with unusually high truck involvement, possible turning-radius issues at intersections along the corridor, heavy truck volumes adding to congestion along the corridor, and points of truck conflicts with cars and pedestrians. In addition, MPO staff will review the Highway Division's and MPO's TIP project information databases and contact the municipalities to identify projects and studies that have already been planned or conducted for each arterial segment selected for study. This information will guide the selection of problem locations within the selected arterial segment that the study should focus on to develop improvements and how previous recommendations will be incorporated into this study.

Products of Task 2

A technical memorandum that will include the following:

- Documentation of safety, operational, and mobility problems facing pedestrians, bicyclists, and motorists
- Documentation of transit service issues, including service deficiencies and connectivity and linkage problems

- Documentation of truck traffic issues
- Documentation of the projects and studies already planned for the arterial segments
- Documentation of the rationale for the selection of the final study locations

Task 3 Collect and Gather Data

Once the problem locations have been identified for the arterial segment selected for study, recent and historical data will be gathered from existing sources, including studies performed by municipalities or by proponents of private development projects, and databases maintained by the MPO and the Highway Division. Unavoidably, some data will have to be collected in the field for the type of analysis anticipated for this work program. The following data are likely to be gathered or collected for the arterial segment that will be selected for study:

- Turning-movement counts for the AM and PM peak periods, including trucks, pedestrians, and bicyclists, and average annual weekday traffic data from automatic traffic recorder (ATR) counts
- Traffic-signal timing plans and coordination settings, signage, and lane configurations
- Bus service performance data and locations of stops, signage, and shelters
- Truck traffic data, including truck origins and destinations
- Right-of-way, pavement widths and conditions, sidewalk widths and conditions, and the condition and signage at midblock crossings
- Development projects, development mitigation proposals, and proposed transportation projects
- Crash statistics, crash rates, and crash diagrams for locations with crash rates exceeding the Highway Division's district average.

Products of Task 3

- Files of various kinds of data for assessing safety, mobility, and operational performance of the problem locations, including roadway inventory data and inventory of bus service and performance data
- A list of economic development and transportation improvement proposals previously planned for the arterial segments

Task 4 Analyze Data

It is anticipated, based on the types of analyses performed in similar studies in the past and the need to provide “complete streets,” where pedestrians, bicyclists, motorists, and transit riders of all ages and abilities are able to safely move along and across a street, that the following types of analyses and evaluations will likely be performed:

- Analyze crash data and prepare crash diagrams to confirm safety concerns and identify possible improvements
- Evaluate the need for new sidewalks, replacement of broken and crumbled sidewalks, and continuity of sidewalks
- Evaluate the need for improving midblock pedestrian crossings by adding new ones, installing pedestrian crosswalk flashing beacons, improving signage at or near midblock pedestrian crossings, or making crossings accessible
- Assess safe and economical means to accommodate bicyclists—for example, adding bike lanes or providing adequate shoulders or allowing bicyclists to share the road with motorists
- Analyze crash and traffic volume data and intersection turning-radius data to determine potential truck traffic safety improvements
- Conduct roundabout, traffic signal warrant, and signal retiming and coordination analyses to determine the appropriate intersection traffic controls and best signal timing plans for safe and efficient movement of pedestrians, bicyclists, and motorists
- Assess the need for upgrading traffic signal equipment upgrade to comply with the requirements of the Americans with Disabilities Act (ADA) for signalized intersections
- Evaluate on-time performance of bus service, bus-stop placement in relationship to demand and pedestrian activity, and the need for bus signs and shelters

Products of Task 4

Crash analysis tables, intersection crash diagrams, delay and queue calculations, bus performance statistics, and maps and other graphics showing pedestrians’ and bicyclists’ needs

Task 5 Recommend Improvements to Pedestrian Mobility, Traffic Operations, Bus Service, and Safety

From the combined results of consultations with the agency and municipal officials and the results of the analyses described above, staff will recommend geometric, traffic control, pavement rehabilitation, roadway enhancement, and other changes to improve traffic operations, with special emphasis on the effective and safe accommodation of pedestrians and bicyclists for crossing streets, walking to shops, and cycling to work. Additional recommendations will include bus service improvements to allow buses to run on time and make it safe for people to walk to and from bus stops and train stations.

Products of Task 5

Recommendations for addressing pedestrian, bicyclist, and motorist safety; accommodation of pedestrians, bicyclists, and transit users; other traffic operations issues, including trucks; and bus service issues

Task 6 Document Study Results

Documentation will be in the form of a report or a technical memorandum on the following subjects: study background, agency and municipal input, identification of problems, data collection, analyses, and recommendations. The document will follow the MassDOT Highway Division's guidelines for preparation of functional design reports as much as possible, taking into consideration the study's budget. The document will be available for review by municipal officials, members of the MPO's subregional groups for the areas in which the arterial segments are located, and the MassDOT Highway Division and Office of Transportation Planning. After comments have been addressed, the draft will be submitted to the MPO for final approval.

Product of Task 6

A final report or memorandum documenting all of the project's tasks and products, including recommendations

ESTIMATED SCHEDULE

It is estimated that this project will be completed 12 months after the notice to proceed is received. The proposed schedule, by task, is shown in Exhibit 1.

ESTIMATED COST

The total cost of this project is estimated to be \$69,981. This includes the cost of 23.7 person-weeks of staff time, overhead at the rate of 97.42 percent, and travel. A detailed breakdown of the estimated costs is presented in Exhibit 2.

Exhibit 1
ESTIMATED SCHEDULE
Priority Corridors for LRTP Needs Assessment, FFY 2014

Task	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Solicit Input	A												
2. Select Study Locations	B												
3. Collect and Gather Data		C											
4. Analyze Data		D											
5. Recommend Improvements						E							
6. Document Study Results	F												

Products/Milestones

- A: Notes on stakeholder input
- B: Technical memorandum on location selection and other documentation
- C: Lists and files of data collected, including notes, worksheets and economic development proposals
- D: Worksheets, traffic model outputs, notes, and other types of analysis documentation
- E: Study recommendations for addressing identified issues
- F: Final report or memorandum documenting study analyses, findings, and recommendations

Exhibit 2
ESTIMATED COST
Priority Corridors for LRTP Needs Assessment, FFY 2014

Direct Salary and Overhead	\$68,781
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Task	Person-Weeks						Direct Salary	Overhead (97.42%)	Total Cost
	M-1	P-5	P-4	P-2	Temp	Total			
1. Solicit Input	0.3	1.0	0.0	0.0	0.0	1.3	\$2,203	\$2,146	\$4,349
2. Select Study Locations	0.3	0.5	0.0	0.0	0.0	0.8	\$1,357	\$1,322	\$2,679
3. Collect and Gather Data	0.0	1.5	0.5	0.0	2.8	4.8	\$4,583	\$4,464	\$9,047
4. Analyze Data	0.3	4.5	1.5	1.1	0.0	7.4	\$11,014	\$10,730	\$21,743
5. Recommend Improvements	0.3	2.5	0.6	0.0	0.0	3.4	\$5,500	\$5,358	\$10,859
6. Document Study Results	3.0	3.0	0.0	0.0	0.0	6.0	\$10,183	\$9,921	\$20,104
Total	4.2	13.0	2.6	1.1	2.8	23.7	\$34,840	\$33,941	\$68,781

Other Direct Costs	\$1,200
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Travel	\$1,200
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TOTAL COST	\$69,981
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Funding

MPO Planning Contract #78890

MPO §5303 Contract #78922